

(b) Enclosed hazardous locations containing devices that handle cargoes must comply with Clauses 6.3.1.2 of API RP 500 and 6.6.1.2 of API RP 505 (incorporated by reference, see § 110.10-1). Ventilation must not be used to reduce the classification of such areas.

(c) Cargo pump rooms must be isolated from all sources of vapor ignition by gastight bulkheads. The gastight bulkhead between the pump room and the pump-motor compartment may be pierced by fixed lights, drive shafts, and pump-engine control rods, provided that the shafts and rods are fitted with fixed oil reservoir gland seals, or pressure grease seals where they pass through the gastight bulkheads. Other types of positive pressure seals must be specially approved by the Commandant (CG-ENG). Access to a cargo handling enclosed area or room must be from the open deck.

(d) Fixed lights in cargo pump rooms or enclosed cargo handling areas must meet the arrangement and construction requirements in § 111.105-31(g) of this part.

(e) A cargo handling area or pump room that precludes the lighting arrangement of paragraph (d) of this section, or where the lighting arrangement of paragraph (d) of this section does not give the required illumination level, must have explosion-proof, flameproof (Ex “d”) or flameproof-increased safety (Ex “de”) lighting fixtures.

#### **§ 111.106-15 Ventilation of hazardous locations.**

(a) The ventilation design principles must comply with Clauses 8.1.3, 8.2, and 8.3 of IEC 60092-502 (incorporated by reference, see § 110.10-1).

Note to § 111.106-15(a): The word “mechanical,” as used in this section, is interchangeable with the word “artificial” used in IEC 60092-502.

(b) A ventilation system must—

(1) Be positioned so as not to recycle vapors from ventilation discharges;

(2) Have its operational controls outside the ventilated space, if the system is mechanical; and

(3) Have a protective metal screen of not more than 13 mm (0.512 in.) square mesh on each ventilation intake and exhaust opening.

(c) The mechanical ventilation of enclosed flammable or combustible liquid cargo handling or cargo pump rooms must be sufficient to effect a minimum complete 30 air changes per hour based on the volume of the pump room and associated trunks up to the deck at which access from the weather is provided. The power ventilation system must be designed to remove vapors from the bottom of the space at points where concentrations of vapors may be expected.

(d) The following spaces must have a supply-type mechanical ventilation system capable of providing at least 8 air changes per hour:

(1) Each space that contains electric motors for cargo handling equipment.

(2) Each cargo control station.

#### **§ 111.106-17 Piping: electrical bonding.**

(a) Tanks or piping systems that are separated from the hull structure by thermal isolation must be electrically bonded to the hull structure by a method under paragraph (c) of this section.

(b) A pipe joint or a hose connection fitting that has a gasket must be electrically bonded by a method under paragraph (c) of this section that bonds—

(1) Both sides of the connection to the hull structure; or

(2) Each side of the connection to the other side.

(c) An electrical bond must be made by at least one of the following methods:

(1) A metal bonding strap attached by welding or bolting;

(2) Two or more bolts that give metal-to-metal contact between the bolts and the parts to be bonded; or

(3) Other metal-to-metal contact between adjacent parts under designed operating conditions.

### **Subpart 111.107—Industrial Systems**

#### **§ 111.107-1 Industrial systems.**

(a) For the purpose of this subpart, an industrial system is a system that—

(1) Is not a ship's service load, as defined in § 111.10-1;

(2) Is used only for the industrial function of the vessel;

(3) Is not connected to the emergency power source; and

(4) Does not have specific requirements addressed elsewhere in this subchapter.

(b) An industrial system that meets the applicable requirements of NFPA NEC 2002 (incorporated by reference, see 46 CFR 110.10–1) must meet only the following:

(1) The switchgear standards in part 110, subpart 110.10, of this chapter.

(2) Part 110, subpart 110.25, of this chapter—Plan Submittal.

(3) Subpart 111.01 of this part—General.

(4) Subpart 111.05 of this part—Equipment Ground, Ground Detection, and Grounded Systems.

(5) Sections 111.12–1(b) and 111.12–1(c)—Prime movers.

(6) Subpart 111.105 of this part—Hazardous Locations.

(c) Cables that penetrate a watertight or fire boundary deck or bulkhead must—

(1) Be installed in accordance with 46 CFR 111.60–5 and meet the flammability-test requirements of either IEEE 1202 or Category A of IEC 60332–3–22 (both incorporated by reference; see 46 CFR 110.10–1); or

(2) Be specialty cable installed in accordance with §111.60–2.

[CGD 94–108, 61 FR 28286, June 4, 1996, as amended at 62 FR 23910, May 1, 1997; USCG–2003–16630, 73 FR 65201, Oct. 31, 2008]

## **PART 112—EMERGENCY LIGHTING AND POWER SYSTEMS**

### **Subpart 112.01—Definitions of Emergency Lighting and Power Systems**

Sec.

112.01–1 Purpose.

112.01–5 Manual emergency lighting and power system.

112.01–10 Automatic emergency lighting and power system.

112.01–15 Temporary emergency power source.

112.01–20 Final emergency power source.

### **Subpart 112.05—General**

112.05–1 Purpose; preemptive effect.

112.05–3 Main-emergency bus-tie.

112.05–5 Emergency power source.

### **Subpart 112.15—Emergency Loads**

112.15–1 Temporary emergency loads.

112.15–5 Final emergency loads.

112.15–10 Loads on systems without a temporary emergency power source.

### **Subpart 112.20—Emergency Systems Having a Temporary and a Final Emergency Power Source**

112.20–1 General.

112.20–3 Normal source for emergency loads.

112.20–5 Failure of power from the normal source or final emergency power source.

112.20–10 Diesel or gas turbine driven emergency power source.

112.20–15 Transfer of emergency loads.

### **Subpart 112.25—Emergency Systems Having an Automatic Starting Diesel Engine or Gas Turbine Driven Emergency Power Source as the Sole Emergency Power Source**

112.25–1 General.

112.25–3 Normal source for emergency loads.

112.25–5 Failure of power from the normal source.

112.25–10 Transfer of emergency loads.

### **Subpart 112.30—Emergency Systems Having an Automatically Connected Storage Battery as the Sole Emergency Power Source**

112.30–1 General.

112.30–3 Normal source of emergency loads.

112.30–5 Transfer of emergency loads.

112.30–10 Restoration of normal source potential.

### **Subpart 112.35—Manually Controlled Emergency Systems Having a Storage Battery or a Diesel Engine or Gas Turbine Driven Generator as the Sole Emergency Power Source**

112.35–1 General.

112.35–3 Normal source for emergency loads.

112.35–5 Manually started emergency systems.

112.35–7 Activating means.

### **Subpart 112.37—Temporary Emergency Power Source**

112.37–1 General.

### **Subpart 112.39—Battery Operated Lanterns**

112.39–1 General.

112.39–3 Operation.